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MARSHALL POLICY DIRECTIVE

DA01

MARSHALL MANAGEMENT MANUAL

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Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 2 of 34

DOCUMENT HISTORY LOG

Status (Baseline/ Revision/ Canceled)	Document Revision	Effective Date	Description
Baseline		5/14/99	Document converted from MSFC-MQM to a Directive. Previous history retained in system as part of canceled or superseded ISO Document files. Revised the description of the Quality System documentation in 7.2 and 7.5 to reflect the conversion to Directives. Cancelled MMI 8040.15 to address RCAR #108. Added clarification of "grandfathering" in 2. Added definitions for "data" and "data management" to 6.
Revision	A	8/16/99	Complete revision to expand the scope to include all products and services provided by MSFC. Also updated to reflect re-structuring of the Center. Para. 4, added NPD 8070.6; para. 6, added definition of contractor, deleted "subcontractor", and revised definition of "flight hardware"; revised para. 7.1.2.1 and 7.1.4.1; changed "subcontractor" to "contractor" throughout. Added text to address safety in para. 2 and 7.1. Para. 7.1.2.1.(a)(3) updated to change signature authority for MWI from "Directorate level or below" to "Directorate level or higher."
Revision	B	9/16/99	Extended date for cancellation of MM's and MMI's in para.7.1.2.1 (4) and 7.1.2.1 (5). Added a reference to MPD 1150.1 to para. 7.1.1.3 and section 4.
Revision	C	12/6/99	Added MPG 8823.1 and MPG 8060.2 to section 4 and para. 7.8.1.1, and revised para. 7.8.1.2 and 7.1.8.9 to address all design control activities. Also, changed MM 1107.1 to MPG 1100.1 and MMI 1420.1 to MPG 1420.1 throughout document. Updated title of MPG 8060.1. Added definition 6.f for GSE. Revised 7.1.2.1(a) (4) and 7.1.2.1(a) (5) to delete dates for cancellation of MMs and MMIs. Revised description of OIs in 7.1.2.1(b).

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 3 of 34

TABLE OF CONTENTS

<u>PARAGRAPH</u>	<u>PAGE</u>
TABLE OF CONTENTS	3
1.0 PURPOSE.....	4
2.0 APPLICABILITY.....	4
2.1 TRANSITION	4
3.0 AUTHORITY	5
4.0 APPLICABLE DOCUMENTS	5
5.0 REFERENCES	7
6.0 DEFINITIONS	7
7.0 POLICY	8
7.1. ORGANIZATION AND ADMINISTRATION (1000-1999)	8
7.1.1 MANAGEMENT RESPONSIBILITY (ISO ELEMENT 4.1).....	9
7.1.2 QUALITY SYSTEM (ISO ELEMENT 4.2).....	11
7.1.3 CONTRACT (CUSTOMER AGREEMENT) REVIEW (ISO ELEMENT 4.3).....	14
7.1.4 DATA MANAGEMENT, INCLUDING DOCUMENT AND DATA CONTROL (ISO ELEMENT 4.5).....	15
7.1.5 PROCESS CONTROL (ISO ELEMENT 4.9)	16
7.1.6 CORRECTIVE AND PREVENTIVE ACTION (ISO ELEMENT 4.14)	17
7.1.7 CONTROL OF QUALITY RECORDS (ISO ELEMENT 4.16).....	18
7.1.8 INTERNAL QUALITY AUDITS (ISO ELEMENT 4.17)	19
7.1.9 SERVICING (ISO ELEMENT 4.19)	19
7.2 LEGAL AND TECHNICAL (2000-2999)	20
7.3 HUMAN RESOURCES/PERSONNEL (3000-3999)	20
7.3.1 TRAINING (ISO ELEMENT 4.18)	21
7.4 PROPERTY AND SUPPLY (4000-4999)	21
7.4.1 CONTROL OF CUSTOMER-SUPPLIED PRODUCT (ISO ELEMENT 4.7).....	21
7.5 PROCUREMENT/SMALL BUSINESS/INDUSTRIAL RELATIONS (5000-5999).....	22
7.5.1 PURCHASING (ISO ELEMENT 4.6).....	22
7.6 TRANSPORTATION (6000-6999).....	24
7.6.1 HANDLING, STORAGE, PACKAGING, PRESERVATION, AND DELIVERY (ISO ELEMENT 4.15)	24
7.7 PROGRAM FORMULATION (7000-7999).....	25
7.7.1 PROGRAM/PROJECT AND QUALITY PLANNING (ISO ELEMENT 4.2)	26
7.8 PROGRAM MANAGEMENT (8000-8999).....	26
7.8.1 DESIGN CONTROL (ISO ELEMENT 4.4).....	27
7.8.2 PRODUCT IDENTIFICATION AND TRACEABILITY (ISO ELEMENT 4.8).....	29
7.8.3 INSPECTION AND TESTING (ISO ELEMENT 4.10).....	29
7.8.4 CONTROL OF INSPECTION, MEASURING, AND TEST EQUIPMENT (ISO ELEMENT 4.11)	31
7.8.5 INSPECTION AND TEST STATUS (ISO ELEMENT 4.12).....	32
7.8.6 CONTROL OF NONCONFORMING PRODUCT (ISO ELEMENT 4.13).....	32
7.8.7 STATISTICAL TECHNIQUES (ISO ELEMENT 4.20)	33
7.9 FINANCIAL MANAGEMENT (9000-9799)	33
8.0 RESPONSIBILITIES	34
9.0 RECORDS.....	34
10.0 MEASUREMENT	34
11.0 CANCELLATION.....	34

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 4 of 34

1. PURPOSE

Marshall Space Flight Center's (MSFC) roles and missions are established and managed using the NASA Strategic Management Process as defined in NPG 1000.2, "NASA Strategic Management Handbook." This process ensures alignment between the "NASA Strategic Plan" (NPD 1000.1), the Enterprise Strategic Plans, and the Center's Implementation Plan. MSFC has been designated as the Agency's Center of Excellence for Space Propulsion. In addition, MSFC has responsibility for the following mission areas: Space Transportation Systems Development; Microgravity Research; and Large Space Optics Manufacturing Technology.

This MPD is a basic manual providing information for the organizational structure, responsibilities, procedures, processes, and resources for implementing ANSI/ASQC Q9001-1994 in accordance with NPD 8730.3, "NASA Quality Management System Policy (ISO 9000)." The MPD is intended to be a top-level requirements document referencing lower-tier documents with more detailed requirements and instructions.

2. APPLICABILITY

This MPD, Marshall Management Manual (MMM), establishes a Marshall Management System (MMS) to ensure consistent quality of NASA MSFC products and services and the safety of our customers, employees, and products. The scope of the MMS is as follows: The MMS shall apply to all products and services provided by the Marshall Space Flight Center.

All in-scope hardware previously grandfathered for ISO registration and surveillance audits, when readied for re-flight, shall be considered in scope to the ISO requirements and this MMM. Exceptions shall be addressed case by case utilizing the process as defined in MPG 1410.2.

2.1 TRANSITION

The MMS is broader in scope than MSFC's current scope of ISO registration, which includes all processes for procurement, design, development, and onsite production of flight hardware, flight software, and associated ground support equipment interfacing with flight hardware and software, for which MSFC has responsibility. External surveillance audits will be conducted by the registrar to the current scope of ISO registration through February 2000. The entire MMS is planned to be included in MSFC's scope of ISO registration by May 2000.

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 5 of 34

Note that this MMM replaces the MSFC Quality Manual (MQM) and the MMS replaces the Quality Management System (QMS) in the earlier versions of this document. The transition from the QMS to the MMS is an incremental process involving documenting newly covered processes by revising and expanding documents, incorporating previously inapplicable documents, and issuing new documents.

3. AUTHORITY

NPD 8730.3, "NASA Quality Management System Policy (ISO 9000)"

4. APPLICABLE DOCUMENTS

- a. MSFC Directives (All MSFC Directives are accessible at <http://starbase.msfc.nasa.gov/directives/directives.htm>.)
- b. NPD 1000.1, "NASA Strategic Plan"
- c. NPG 1000.2, "NASA Strategic Management Handbook"
- d. MPG 1050.1, "Contract (Customer Agreement) Review"
- e. MPG 1100.1, "Marshall Space Flight Center Organizational Manual"
- f. MPD 1150.1, "Establishment of Councils, Boards, and Committees"
- g. MPG 1280.1, "Management Review"
- h. MPG 1280.2, "Process Control"
- i. MPG 1280.4, "MSFC Corrective Action System"
- j. MPG 1280.5, "MSFC Preventive Action System"
- k. MPG 1280.6, "Internal Quality Audits"
- l. MPG 1280.7, "Servicing"
- m. MPG 1410.1, "Documentation and Data Control for Organizational Issuances"
- n. MPG 1410.2, "Marshall Management Directives System"
- o. MPG 1440.2, "MSFC Records Management Program"
- p. MPG 1420.1, "MSFC Forms Management Program"

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 6 of 34

- q. MPG 1441.1, "Control of Quality Records"
- r. MPG 3410.1, "Training"
- s. MPG 4000.1, "Control of Customer-Supplied Product"
- t. MPG 5000.1, "Purchasing"
- u. MPG 6410.1, "Handling, Storage, Packaging, Preservation, and Delivery"
- v. MPG 7120.1, "Program/Project Planning"
- w. MPG 7120.2, "Multiprogram/Project Common-Use Documentation"
- x. MPG 7120.3, "Data Management, Programs/Projects"
- y. NPD 7120.4, "Program/Project Management"
- z. NPD 7120.5, "NASA Program and Project Management Processes and Requirements"
- aa. MPG 8040.1, "Configuration Management, MSFC Programs"
- bb. MPG 8040.2, "Product Identification"
- cc. MPG 8040.3, "Product Traceability"
- dd. MPG 8060.1, "Flight Systems Design Control"
- ee. MPG 8060.2, "Non-Flight and Non-Facility Design Control"
- ff. NPD 8070.6, "Technical Standards"
- gg. MPG 8730.1, "Inspection and Testing"
- hh. MPG 8730.2, "Inspection and Test Status"
- ii. MPG 8730.3, "Control of Nonconforming Product"
- jj. NPD 8730.3, "NASA Quality Management System Policy (ISO 9000)"
- kk. MPG 8730.4, "Statistical Techniques"
- ll. MPG 8730.5, "Control of Inspection, Measuring, and Test Equipment"

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 7 of 34

mm. MPG 8823.1, "Design Control for Facilities"

nn. Enterprise Strategic Plans

oo. Federal Acquisition Regulation (FAR)

pp. MSFC Implementation Plan

qq. NASA Federal Acquisition Regulation Supplement (NFS)

rr. OMB Circular A-119, "Federal Participation in the Development and Use of Voluntary Standards"

NASA Directives other than those listed above may be applicable to MSFC activities. All NASA Directives are accessible at <http://starbase.msfc.nasa.gov/directives/directives.htm>.

5. REFERENCES

a. ANSI/ASQC Q9001-1994, "American National Standard, Quality Systems - Model for Quality Assurance in Design, Development, Production, Installation, and Servicing"

b. ANSI/ISO/ASQC A8402-1994, "Quality Management and Quality Assurance - Vocabulary"

6. DEFINITIONS

In general, the definitions given in ANSI/ISO/ASQC A8402 apply. However, the following definitions are offered to assist the user in understanding the application of the ANSI/ASQC Q9001 quality standard and the quality policies in this MPD:

a. Contractor. The organization that provides a product or service to MSFC in a contractual situation. (Synonymous with "subcontractor" in the ISO standard.)

b. Customer/Purchaser. The non-MSFC recipient of a product or service provided by MSFC.

c. Data. Any electronic or written information/statement which represents policies, procedures, instructions, instructional material, drawings, plans, specifications, requirements, handbooks, manuals, reports, standards, or other correspondence. These may be stored in a variety of media such as magnetic tapes, computer disks, data sheets, log books, strip charts, photographs, videocassettes, etc.

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 8 of 34

d. Data Management. The timely and economical identification/definition, preparation, control, and disposition of documents and data required by a program, project, or activity.

e. Flight Hardware. Within the scope of MSFC ANSI/ASQC Q9001 registration, flight hardware, flight software, and flight or ground support equipment shall be considered any hardware or software that is intended to fly in, or is part of, the Shuttle Transportation System (STS) or some other flight system. Hardware and software intended to fly only on a balloon flight, sounding rocket, or aircraft flight are excluded.

f. Ground Support Equipment (GSE). Non-flight systems, equipment, or devices (with a physical or functional interface with flight hardware) necessary to routinely support the operations of transporting, receiving, handling, assembly, inspection, test, checkout, servicing and launch of space vehicles and payloads at launch, landing, or retrieval sites.

g. Process. Set of interrelated resources and activities which transform inputs into outputs. Resources may include personnel, finance, facilities, equipment, techniques, and methods.

h. Product. The result of activities or processes which is delivered to the customer.

i. Service. The results generated by activities at the interface between the supplier and the customer and by supplier internal activities to meet customer needs.

j. Supplier. The organization (within MSFC) that provides a product/service to the customer.

7. POLICY

7.1 ORGANIZATION AND ADMINISTRATION (1000-1999)

MSFC shall establish and maintain documented procedures/instructions for safety, general, management, and administrative processes.

The following processes are governed by the organization and administration series: (See paragraph 4.a.)

- a. General (10XX)
- b. Organizational Structure (11XX)

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 9 of 34

- c. Internal Management Controls (12XX)
- d. External Relationships (13XX)
- e. Administrative Management Programs (14XX)
- f. Administrative Services (15XX)
- g. Security (16XX)
- h. Safety (17XX)
- i. Occupational Health (18XX)
- j. Standards of Conduct (19XX)

7.1.1 MANAGEMENT RESPONSIBILITY (ISO ELEMENT 4.1)

7.1.1.1 QUALITY POLICY

To ensure conformance to the requirements of ANSI/ASQC Q9001-1994, Paragraph 4.1.1, MSFC senior management has defined and documented the policy for quality (see Figure 1).

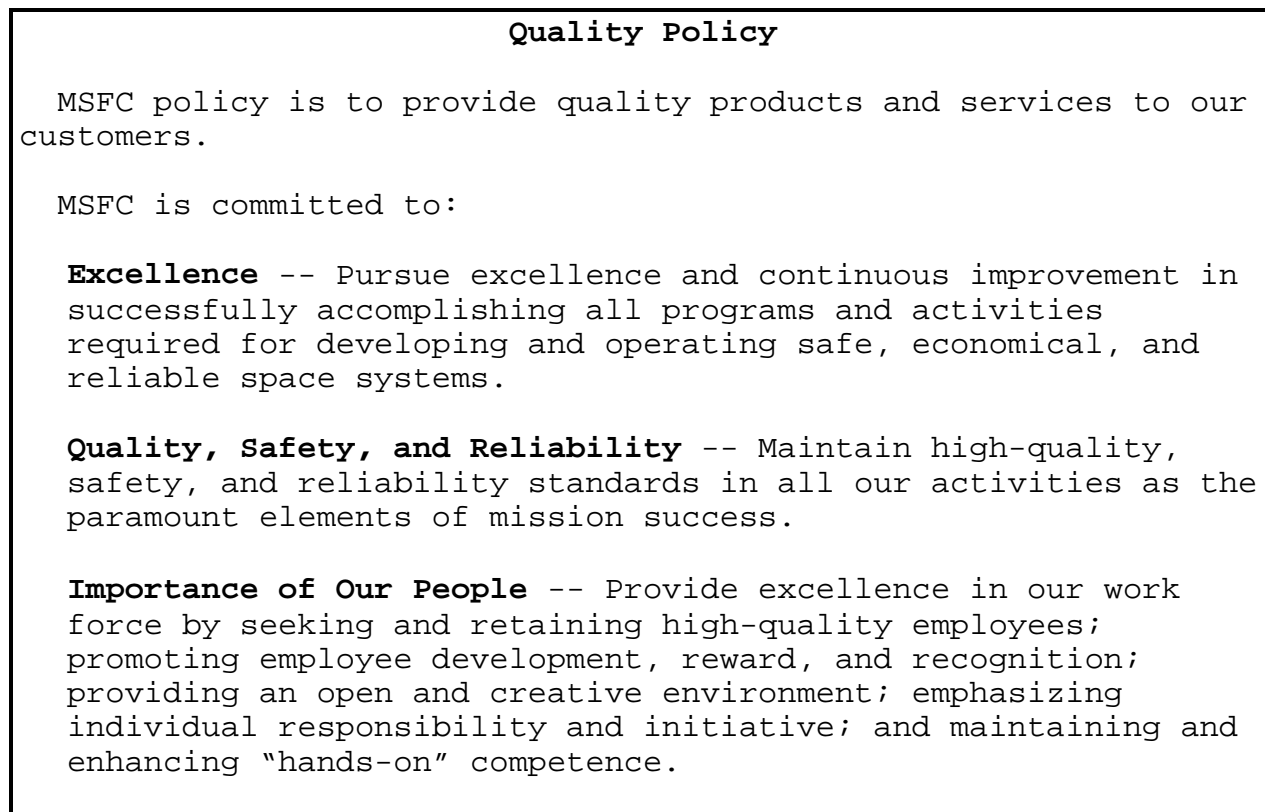


FIGURE 1. MSFC Quality Policy

Each MSFC manager shall be responsible for ensuring the quality policy is understood, implemented, and maintained at all levels of the organization.

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 10 of 34

This quality policy will be communicated throughout the organization via ISO orientation, employee training, and quality reviews with management.

7.1.1.2 ORGANIZATION

a. RESPONSIBILITY AND AUTHORITY

The MSFC Center Director is responsible for control of the MSFC Management System (MMS). While the Center Director has the ultimate authority and responsibility for establishing and maintaining the MMS (reference NPD 8730.3), the Management Representative has the day-to-day authority and responsibility for the MMS implementation. All MSFC directors, program/project managers, and other personnel are responsible for understanding and complying with the MMS and MSFC's policy for quality. The directors and program/project managers may delegate authority for the quality program, but they will maintain the responsibility. (Figure 2 shows the organizational relationships at MSFC.)

The Director, Safety and Mission Assurance (S&MA), has the organizational freedom to initiate action to identify and prevent MMS problems, to initiate, recommend, or suggest solutions through organizational functions; to verify the implementation of these solutions; to control further processing, delivery, or installation of nonconforming product until the deficiency or unsatisfactory condition has been corrected; and to record any problems relating to the product, process, and MMS.

S&MA conducts internal quality assurance audits to ensure continuing compliance with the MMS. S&MA will establish resource requirements for audits. The results of these audits are given to the management personnel responsible for the area being audited.

Responsibility and authority for employees are defined in the employee's performance plan and through process and/or procedural documentation. Individual performance plans and job descriptions document the responsibilities and authority of all personnel whose work affects product quality. Organizational charters are documented in MPG 1100.1, "Marshall Space Flight Center Organizational Manual."

b. RESOURCES

The MSFC Center Director shall be responsible for providing sufficient resources, including trained personnel (see paragraph

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 11 of 34

7.3.1)), for management, performance of work, verification, and auditing.

c. MANAGEMENT REPRESENTATIVE

The MSFC Center Director has appointed the Associate Director as the Management Representative. The Associate Director shall ensure that an MMS is established, implemented, and maintained in accordance with ANSI/ASQC Q9001, and report on the performance of that MMS to Center management for review and improvement. The Associate Director will also act as the primary communications point for liaison with external bodies affecting the MSFC MMS.

7.1.1.3 MANAGEMENT REVIEW

The Management Representative reports semi-annually to the MSFC Quality Council on the status of the MMS. These reviews are conducted per MPG 1280.1, "Management Review." Membership and operation of the Quality Council is defined under MPD 1150.1, "Establishment of Councils, Boards, and Committees," Charter Number MC-02.

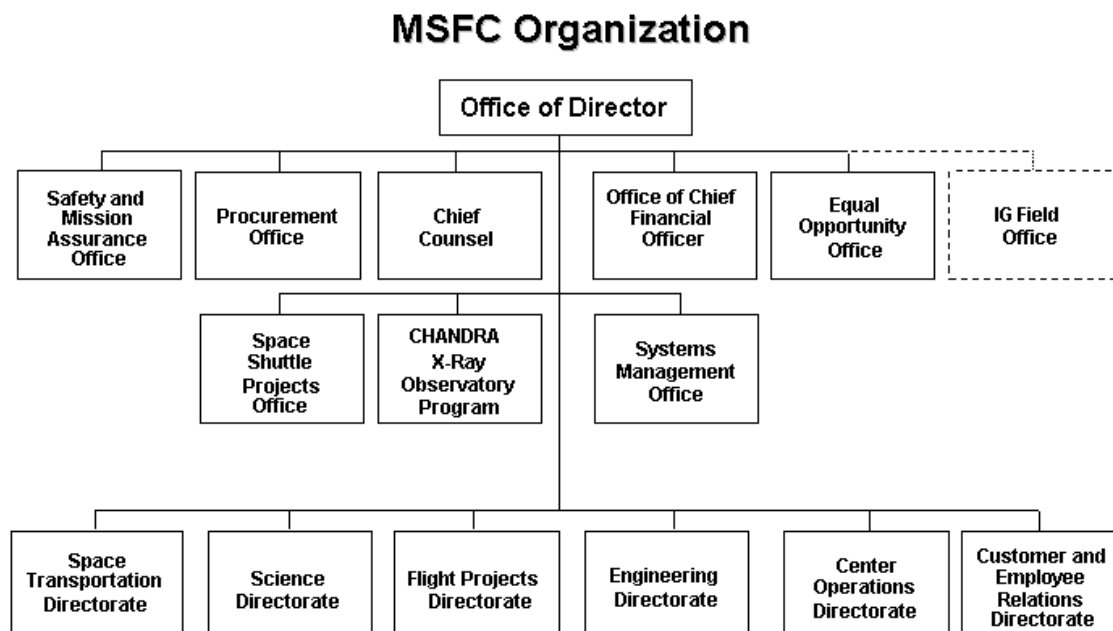


FIGURE 2. George C. Marshall Space Flight Center Organizational Chart

7.1.2 QUALITY SYSTEM (ISO ELEMENT 4.2, paragraphs 4.2.1 and 4.2.2)

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 12 of 34

7.1.2.1 GENERAL

To ensure conformance to the requirements of ANSI/ASQC Q9001-1994, Paragraph 4.2.1, MSFC shall establish, document, and maintain an MMS as a means of ensuring that MSFC's products and services conform to specified requirements. MSFC has prepared this Marshall Management Manual (MMM) covering the requirements of ANSI/ASQC Q9001-1994.

The Management Representative is responsible for maintenance of this MMM. The controlled version is available on the World Wide Web (WWW) via the MSFC Management Directives Master List at <http://starbase.msfc.nasa.gov/directives/directives.htm>. By definition, any printed version of this MMM is uncontrolled. Any proposed revision to this manual is submitted to the Center Director. The Center Director authorizes approval of the revision after an internal review by the Directives Control Board, chaired by the Management Representative.

The MMM includes or makes reference to the MMS procedures and outlines the structure of the documentation used in the MMS. Authority, applicable, and reference documents form a part of the citing document to the extent specified. Unless otherwise specified, the documents referred to are the latest approved versions. The MSFC documentation hierarchy is defined as follows:

(a) Marshall Management Directives System (MMDS). The MMDS consists of Marshall Policy Directives (MPDs), Marshall Procedures and Guidelines (MPGs), Marshall Work Instructions (MWIs), Marshall Management Instructions (MMIs), and Management Manuals (MMs) (refer to MPG 1410.2, "Marshall Management Directives System"):

(1) MPD. MPDs are issued to state policy and formal delegations of authority; identify responsibilities and principal policy relationships; and are approved by the Center Director.

(2) MPG. MPGs document procedural requirements or guidelines for how Center-level activities are conducted to implement NASA and/or MSFC policy and are approved at the Directorate level or higher.

(3) MWI. MWIs provide detailed instructions on performing specific duties that apply to all or numerous MSFC organizations and are approved at the Directorate level or higher.

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 13 of 34

(4) MMI. Management Instructions will be used to publish policy, delegations of authority, program or institutional management instructions, general guidelines, and other management information of a continuing nature. Formal agreements containing material within the above definition will also be included. MMIs will be converted to MPDs, MPGs, or MWIs, or canceled. MMIs are valid until officially canceled or replaced.

(5) MM. Manuals will be used to issue a large amount of specialized subject matter, proceduralized information of a continuing nature which is best published in manual form, or to group for ease of reference a number of issuances in the same subject matter area. MSFC supplements to Agency-wide directives fall within the category of Management Manuals (MMs). MMs will be converted to MPDs, MPGs, or MWIs, or canceled. MMs are valid until officially canceled or replaced.

(b) Organizational Issuances (OIs). OIs provide detailed instructions for internal use within an organization. OIs may apply to two or more organizations if issued jointly by heads of the organizations involved. OIs are not maintained in the MMDS. OIs include, but are not limited to, organizational work instructions (OWIs), processes, procedures, memoranda, and organizational forms. (Refer to MPG 1410.1, "Document and Data Control for Organizational Issuances.")

(c) Program/Project Data. Program/Project data includes all data required for the definition of the product and the management of the Program/Project. The management of Program/Project data will be in accordance with MPG 7120.3, "Data Management, Programs/Projects."

(d) Multiprogram/Project Common-Use Documentation. Technical descriptive standards, handbooks, or specifications prepared for common use by MSFC shall be in accordance with MPG 7120.2, "Multiprogram/Project Common-Use Documentation."

(e) All records are documented and retained according to MPG 1440.2, "MSFC Records Management Program."

7.1.2.2 QUALITY-SYSTEM PROCEDURES

MSFC organizations prepare documented procedures consistent with the requirements of ANSI/ASQC Q9001-1994 and MSFC's quality policy and effectively implement the MMS and its documented procedures.

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 14 of 34

The MMS is a formally documented system of planned activities established to provide evidence of compliance to the requirements of applicable regulations, codes, standards, specifications, drawings, and the MSFC quality policy. All of these activities are governed by procedures and written instructions supported with records of objective evidence of satisfactory compliance. All organizations establish measures to implement the MMM requirements. This includes the preparation of procedures and documentation that assures compliance with the MMM.

The range and detail of the procedures that form part of the MMS depend on the complexity of the work, the methods used, and the skills and training needed by personnel involved in carrying out the activity. Procedures may make reference to work instructions that define how an activity is performed.

7.1.3 CONTRACT (CUSTOMER AGREEMENT) REVIEW (ISO ELEMENT 4.3)

7.1.3.1 GENERAL

MSFC shall establish and maintain documented procedures for contract (i.e., Customer Agreement) review and for the coordination of these activities. [Refer to MPG 1050.1, "Contract (Customer Agreement) Review."]

7.1.3.2 REVIEW

Before submission of a tender, or at the acceptance of a contract or order (statement of requirement), the tender, contract, or order is reviewed by MSFC to ensure that:

- (a) the requirements are adequately defined and documented; MSFC does not accept verbal orders;
- (b) any differences between the contract or accepted order requirements and those in the tender are resolved;
- (c) The MSFC departments and offices involved have the capability to meet the contract or accepted order requirements.

7.1.3.3 AMENDMENT TO CONTRACT

MSFC shall identify how an amendment to a contract is made and correctly transferred to the functional elements concerned within MSFC's organization.

7.1.3.4 RECORDS

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 15 of 34

Records of contract reviews are maintained (see paragraph 7.1.7).

7.1.4 DATA MANAGEMENT, INCLUDING DOCUMENT AND DATA CONTROL (ISO ELEMENT 4.5)

7.1.4.1 GENERAL

MSFC shall establish and maintain documented procedures to identify/define, prepare, control, and disposition all documents and data that are within the scope of MSFC's MMS relating to the requirements of ISO 9001 including, to the extent applicable, documents of external origin such as standards and customer drawings (refer to MPG 1410.2, "Marshall Management Directives System"; MPG 1410.1, "Processing Marshall Management Directives"; MPG 7120.3, "Data Management, Programs/Projects"; MPG 7120.2, "Multiprogram/Project Common-Use Documentation"; and MPG 1420.1, "MSFC Forms Management Program"). All records are documented, retained, and dispositioned in accordance with MPG 1440.2, "MSFC Records Management Program." The MSFC Documentation Repository will be MSFC's primary receipt, storage, and distribution point for Military, Federal, and Industry specifications, standards, and handbooks used by MSFC.

The use of the words "shall" or "will" indicates mandatory requirements.

MSFC shall use voluntary consensus standards in lieu of government-unique standards in their procurement and regulatory activities, except where inconsistent with law or otherwise impractical, per OMB Circular A-119 and NPD 8070.6, "Technical Standards." Use of voluntary consensus standards is not required where they would demonstrably fail to serve NASA's program needs. The Information Handling Services (IHS) Engineering Resource Center (ERC), accessible from the MSFC Integrated Document Library, serves as the master list for searching for information about various specifications and standards; MSFC and NASA master lists shall be used to verify the correct version status of MSFC/NASA documentation and previous/obsolete versions authorized for use at MSFC.

7.1.4.2 DOCUMENT AND DATA APPROVAL AND ISSUE

The documents and data are reviewed and approved for adequacy and accuracy prior to issue to perform work by authorized management, or designee, after having received concurrence by technical authorities and employee representatives performing the tasks. Each organization maintains the documents and data or identifies the repository location of the documents and data such that each

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 16 of 34

employee who is performing the task can easily retrieve the applicable documents/data for use. These documents can be in the form of any type of media; electronic media is recommended when available. Master lists identifying the current revision status of documents, as well as previous versions authorized for use, shall be established and readily accessible from a central location to preclude the use of invalid and/or obsolete documents. This control shall ensure that:

- Pertinent issues of appropriate documents are available at all locations essential to the effective functioning of the MMS.
- Invalid and/or obsolete documents are promptly removed from all points of issue or use, destroyed, or otherwise ensured against unintended use.
- Any previous/obsolete version of any documents within the MSFC Master List system retained by the user (e.g., for limited applicability, for historical purposes, for reference) will be:
 - a. Marked, OR
 - b. Otherwise suitably identified.

7.1.4.3 DOCUMENT AND DATA CHANGES

Changes, revisions, and cancellations to documents and data shall be reviewed and approved by the same MSFC organizations that performed the original review and approval, unless designated otherwise. The designated MSFC organizations performing review and approval shall have access to pertinent background information upon which to base their review and approval. Where practicable, a description of the change shall be identified in the document or in the appropriate attachments.

7.1.5 PROCESS CONTROL (ISO ELEMENT 4.9)

Procedures and instructions are developed on an ongoing basis by responsible organizations to ensure functional activities are performed under controlled conditions. The methods for process controls for specific processes can be obtained through the MSFC Integrated Document Library. Process controls for hardware and software products are carried out in accordance with MPG 1280.2, "Process Control."

To ensure process control:

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 17 of 34

(a) MSFC shall identify and plan production, installation, servicing, and other processes which directly affect quality and shall ensure that these processes are carried out under controlled conditions.

(b) MSFC shall establish and maintain documented procedures defining the manner of production, installation, servicing, and other processes where the absence of such procedures could adversely affect quality.

Procedures shall describe the necessary equipment, tools, environment, and methodology used to ensure compliance with reference standards/codes, quality plans, and/or documented procedures.

(c) MSFC shall ensure the monitoring and control of suitable process parameters and product characteristics are included within the documented work procedures or quality plan.

(d) MSFC shall ensure manufacturing process descriptions, equipment, and process capabilities are reviewed and approved to assure that adequate controls are exercised.

(e) MSFC shall ensure workmanship standards and acceptance criteria are specified through written standards, illustrations, or other means to ensure product quality.

(f) MSFC shall maintain equipment in a suitable manner to ensure continuing process capability.

(g) Special processes are defined as processes which may not be fully verifiable through inspection or tests at completion of the process results. MSFC shall ensure that processes which cannot be fully verified by subsequent inspection and testing of the product are carried out by qualified operators and/or continuously monitored and controlled to ensure that the product complies with requirements. MSFC shall specify the requirements for qualification of processes, including equipment and personnel.

Records shall be maintained for qualified processes, equipment, and personnel, as appropriate.

7.1.6 CORRECTIVE AND PREVENTIVE ACTION (ISO ELEMENT 4.14)

7.1.6.1 GENERAL

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 18 of 34

MSFC shall establish and maintain documented procedures to ensure consistent and effective methods for correction and prevention of recurrence of nonconformances. A consistent procedure to ensure that nonconformances are corrected is necessary for the delivery of quality product to the customer. Any corrective or preventive action taken to eliminate the causes of actual or potential nonconformities shall be to a degree appropriate to the magnitude of problems and commensurate with the risks encountered. Any changes to the documented procedures as a result of corrective or preventive actions shall be recorded and implemented.

7.1.6.2 CORRECTIVE ACTION

MSFC shall establish procedures for the effective handling of customer concerns or complaints and reports of product nonconformances. (Refer to MPG 1280.4, "MSFC Corrective Action System.") Disciplined problem-solving methods shall be used during investigation of cause of nonconformance to specification or requirement relating to product, process, and Management System. Results of the investigation and analysis shall be recorded (see paragraph 7.1.7). Procedures shall be established for determination of corrective action needed to eliminate the cause of nonconformances, and shall define corrective action follow-up activity to ensure documented corrective action is taken and that it is effective.

7.1.6.3 PREVENTIVE ACTION

MSFC shall establish procedures for preventive action which uses appropriate sources of information such as processes and work operations which affect product quality, concessions, audit results, quality records, service reports, and customer complaints to detect, analyze, and eliminate potential causes of nonconformances. (Refer to MPG 1280.5, "MSFC Preventive Action System.") Steps needed to effectively deal with problems requiring preventive action shall be determined and initiated, controls shall be applied to ensure that preventive action is effective, and all relative information shall be submitted for management review (see paragraph 7.1.1.3).

7.1.7 CONTROL OF QUALITY RECORDS (ISO ELEMENT 4.16)

Quality records activities are performed in accordance with MPG 1441.1, "Control of Quality Records." To ensure control of quality records:

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 19 of 34

(a) MSFC shall establish and maintain documented procedures for the identification, collection, indexing, filing, storage, accessing, maintenance, and disposition of quality records.

(b) Quality records, including pertinent quality records from MSFC customers and suppliers, shall be maintained to demonstrate conformance to specified requirements and the effective operation of the Quality System.

(c) MSFC shall ensure quality records are legible and shall be stored and retained in such a way that they are readily retrievable and not subject to damage, deterioration, or loss. Retention times shall be established and recorded.

Where agreed with the customer, quality records shall be made available to the customer for evaluation for an agreed period.

7.1.8 INTERNAL QUALITY AUDITS (ISO ELEMENT 4.17)

S&MA shall establish and maintain documented procedures for planning and implementing internal quality audits. (Refer to MPG 1280.6, "Internal Quality Audits.") MSFC shall plan and perform internal audits on a scheduled basis, according to the status and importance of the activity to determine the effectiveness of the MSFC MMS. The results shall be documented and maintained as quality records (see paragraph 7.1.7) and distributed to affected organizations. Nonconformances identified shall be tracked to ensure that timely corrective action is taken by the management of the affected area.

MSFC activities shall be audited by personnel independent of the activity under review for compliance with documented procedures, plans, instructions and accepted customer agreements, and to determine the effectiveness of the MMS.

Follow-up audits shall be performed by MSFC to verify and record the implementation and effectiveness of the corrective action taken and shall be maintained as quality records (see paragraph 7.1.7). Corrective action commitments made in response to audit findings are assessed to ensure implementation and effectiveness of the action.

MSFC will take the results of the initial audit, follow-up audit, and any action taken as an integral part of the input, to the management review activities (see paragraph 7.1.1.3).

7.1.9 SERVICING (ISO ELEMENT 4.19)

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 20 of 34

Where servicing is a specified requirement, each MSFC organization shall establish and maintain documented procedures for servicing their products, and be responsible for performing, verifying, and reporting that the servicing meets the specified requirements. (Refer to MPG 1280.7, "Servicing.")

7.2 LEGAL AND TECHNICAL (2000-2999)

7.2.1 LEGAL

MSFC, through its Chief Counsel's Office, has established and shall maintain appropriate procedures and Office Issuances for the implementation, generation, and control of legal and patent functions/processes. Records are maintained.

The Chief Counsel's Office activities are governed by the Legal and Technical series: (See para. 4.a.)

a. General (20XX)

7.2.2 TECHNICAL

MSFC shall establish and maintain documented procedures/instructions for the management and operation of MSFC's scientific and technical information programs, including the technology utilization office. Records are maintained.

The following activities are governed by the Legal and Technical series: (See paragraph 4.a.)

- a. General (20XX)
- b. Technology Utilization (21XX)
- c. Scientific and Technical Information (22XX)
- d. Management Information Systems (23XX)
- e. ADP Management (24XX)
- f. Communications (25XX)
- g. Photographic Services Management (26XX)
- h. Information Technology Management (28XX)

7.3 HUMAN RESOURCES/PERSONNEL (3000-3999)

MSFC shall establish and maintain documented procedures/instructions for the management and operation of NASA personnel functions.

The following activities are governed by the Human Resources/Personnel series: (See paragraph 4.a.)

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 21 of 34

- a. General (30XX)
- b. Executive Human Resources Management (31XX)
- c. General Personnel Provisions (32XX)
- d. Employment (General) (33XX)
- e. Employee Performance and Utilization (34XX)
- f. Position Classification, Pay, and Allowances (35XX)
- g. Time and Attendance (36XX)
- h. Personnel Relations and Services (37XX)
- i. Insurance and Annuities (38XX)
- j. General and Miscellaneous (39XX)

7.3.1 TRAINING (ISO ELEMENT 4.18)

MSFC shall establish and maintain documented procedures that identify the training needs and provide appropriate training of personnel performing services directly affecting quality. (Refer to MPG 3410.1, "Training.") Personnel performing specific assigned tasks are qualified on the basis of appropriate education, training and/or experience, as required. Appropriate training records are maintained as quality records (see paragraph 7.1.7).

7.4 PROPERTY AND SUPPLY (4000-4999)

MSFC shall establish and maintain documented procedures/instructions for the management and operation of NASA property and supply management functions.

The following activities are governed by the Property and Supply series: (See paragraph 4.a.)

- a. General (40XX)
- b. Inventory Management (41XX)
- c. Equipment Management (42XX)
- d. Utilization and Disposal (43XX)
- e. Supply Cataloging (44XX)
- f. Storage and Distribution (45XX)
- g. Expanded Supply Control (46XX)

7.4.1 CONTROL OF CUSTOMER-SUPPLIED PRODUCT (ISO ELEMENT 4.7)

7.4.1.1 GENERAL

To ensure control of customer-supplied product, MSFC establishes and maintains documented procedures for the control of verification, storage, and maintenance of customer-supplied products provided for incorporation into MSFC supplies or for related activities. (Refer to MPG 4000.1, "Control of Customer-

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 22 of 34

Supplied Product.") Unless specifically specified otherwise by the customer, all MSFC customer-supplied products, from time of receipt until the time they are transferred out of the MSFC MMS, are verified, stored, and maintained in accordance with the requirements and procedures applicable to MSFC hardware of the same classification.

7.4.1.2 UNSUITABILITY

Customer-supplied products which are lost, damaged, or are found to be otherwise unsuitable for use, are recorded and reported to the purchaser/customer.

Verification by MSFC does not absolve the customer of the responsibility to provide acceptable product.

7.5 PROCUREMENT/SMALL BUSINESS/INDUSTRIAL RELATIONS (5000-5999)

MSFC shall establish and maintain documented procedures/instructions for the management and operation of NASA procurement and contracting functions.

The following activities are governed by the Procurement/Small Business/Industrial Relations series: (See paragraph 4.a.)

- a. Procurement/Small Business/Industrial Relations 50XX)
- b. Procurement (Contracts) - General (51XX)
- c. Contractor Labor Relations (52XX)
- d. Reliability and Quality Assurance (53XX)
- e. Contractor-Held Government Property (54XX)
- f. Patent Waiver (55XX)
- g. Statement of Work (56XX)
- h. Awards, Inventions, and Contributions (57XX)
- i. Grants and Cooperative Agreements (58XX)
- j. Contractor Financial Management and Reporting (59XX)

7.5.1 PURCHASING (ISO ELEMENT 4.6)

7.5.1.1 GENERAL

MSFC shall establish and maintain documented procedures to ensure that purchased product and services conform to specified requirements. (Refer to MPG 5000.1, "Purchasing.") Procedures shall ensure that materials received conform to the applicable drawings, specification, and quality standards. Verification methods employed are: Quality System Surveys and Audits, Source Inspections, Supplier Performance Evaluations, and inspection and test of materials upon receipt.

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 23 of 34

MSFC personnel adhere to the following regulations and guidelines for all MSFC procurements:

- (a) NASA procurements shall be conducted in accordance with the Federal Acquisition Regulation (FAR) and the NASA FAR Supplement.
- (b) Contractor procurements shall be conducted in accordance with the contractor's company purchasing procedures and standard commercial practices and contain any FAR flow-down clauses.
- (c) Where appropriate and beneficial to NASA, contractors shall be contractually required to have quality systems that comply with or are registered to the appropriate ISO 9000 standard. (Reference NPD 8730.3)

7.5.1.2 ASSESSMENT OF CONTRACTORS

MSFC evaluates and selects contractors on the basis of their ability to meet all specified requirements including the quality system and any specific quality assurance requirements. The various methods used in this assessment are:

- Quality System Evaluations and/or Surveys
- Past Performance Evaluations and Customer Questionnaires
- Capability or Mission Suitability Evaluations

The type and extent of control exercised over contractors shall be defined. The type and extent of control will be dependent upon the type of product, impact of the purchased product or services on the quality of the final product, and where applicable, on the quality audit reports and/or quality records of the previously demonstrated capability and performance.

7.5.1.3 PURCHASING DATA

Purchasing documents shall clearly describe the product ordered, including, where applicable:

- (a) The type, class, grade, or other precise identification;
- (b) The title or other positive identification, and applicable issues of specifications, drawings, process requirements, inspection instructions, and other relevant technical data, including requirements for approval or qualification of product, procedures, process equipment, and personnel; and

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 24 of 34

(c) The title, number, and issue of the Quality System standard to be applied.

MSFC reviews and approves purchasing documents for adequacy of the specified requirements prior to release.

7.5.1.4 VERIFICATION OF PURCHASED PRODUCT

a. MSFC VERIFICATION AT CONTRACTOR'S PREMISES

Where MSFC proposes to verify purchased product at premises, MSFC shall specify verification arrangements and the method of product release in the purchasing documents.

b. CUSTOMER VERIFICATION OF CONTRACTED PRODUCT

If specified in the customer agreement, an MSFC customer shall be afforded the right to verify, either on premises or at MSFC that the purchased product conforms to specified requirements. Such verification shall not be used by MSFC as evidence of effective control of quality by the contractor.

Verification by the MSFC customer shall not absolve MSFC of the responsibility to provide an acceptable product, nor shall it preclude subsequent rejection by the MSFC customer.

7.6 TRANSPORTATION (6000-6999)

MSFC shall establish and maintain documented procedures/instructions for the management and operation of NASA transportation functions.

The following activities are governed by the Transportation series: (See paragraph 4.a.)

- a. General (60XX)
- b. Commercial Freight Services (61XX)
- c. Traffic Management Programs (62XX)
- d. Transportation of Unusual or Hazardous Cargo (63XX)
- e. Preparation and Handling of Cargo (64XX)
- f. Special Airlift Services (65XX)
- g. Transportation and Transport Engineering (66XX)
- h. Motor Vehicle Operation and Management (67XX)
- i. Passenger Transportation (68XX)

7.6.1 HANDLING, STORAGE, PACKAGING, PRESERVATION, AND DELIVERY (ISO ELEMENT 4.15)

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 25 of 34

7.6.1.1 GENERAL

MSFC maintains documented procedures for handling, storage, packaging, preservation, and delivery of products which are within the scope of MSFC's MMS. (Refer to MPG 6410.1, "Handling, Storage, Packaging, Preservation, and Delivery.")

7.6.1.2 HANDLING

Handling methods to prevent damage and deterioration, including Electrostatic Discharge Sensitive (EDS) handling and precautions, are implemented and updated routinely.

7.6.1.3 STORAGE

Controlled storage and stock areas are utilized to prevent damage, loss, or deterioration of materials and products. Procedures shall be documented for authorizing the receipt and dispatch to and from these areas. Access to storage areas is limited to authorized personnel. Special provisions will be established and implemented for EDS, age-sensitive materials, and items stored requiring environmental controls. Periodic assessment of the condition of product in stock to detect deterioration shall be conducted.

7.6.1.4 PACKAGING

Documented procedures and/or packaging plans shall be initiated to define the controls and verification applied to the preservation, packaging, and marking processes (including materials used) to ensure compliance with specified requirements.

7.6.1.5 PRESERVATION

MSFC applies appropriate methods for preservation and segregation of products when the product is under MSFC control.

7.6.1.6 DELIVERY

MSFC protects the quality of product after inspection and test is ensured. Where specified by customer agreement, this protection shall be extended to include delivery to destination.

7.7 PROGRAM FORMULATION (7000-7999)

MSFC shall establish and maintain documented procedures/instructions for the management, planning, and administration of Research and Development programs and groups of projects and laboratory type organizations.

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 26 of 34

The following activities are governed by the Program Formulation series: (See paragraph 4.a.)

- a. General (70XX)
- b. Research and Development Planning and Approval (71XX)
- c. Institutional Planning and Approval (72XX)
- d. Facility Planning and Approval (73XX)
- e. Budget Formulation and Execution (74XX)
- f. Commercialization (75XX)
- g. Program Operating Plans (76XX)
- h. Human Resources Utilization (77XX)
- i. Resources Authority Allocation System (78XX)
- j. Aircraft Operations and Management (79XX)

7.7.1 PROGRAM/PROJECT AND QUALITY PLANNING (ISO ELEMENT 4.2, PARAGRAPH 4.2.3)

MSFC defines and documents how requirements will be met for each project, program or activity within our defined scope. Program/Project and Quality planning is consistent with all other requirements of MSFC's MMS and is documented in a format to suit MSFC's method of operation. Program/Project and Quality planning is performed per MPG 7120.1, "Program/Project Planning."

Configuration management and data management shall be applied, with the optimum degree of uniformity, to all programs and projects procured through contracts or acquired through in-house activities. The configuration management and data management activities that fulfill the requirements of NPD 7120.4, "Program/Project Management," and NPG 7120.5, "NASA Program and Project Management Processes and Requirements," shall be documented and implemented in accordance with MPG 8040.1, "Configuration Management, MSFC Programs," and MPG 7120.3, "Data Management, Programs/Projects."

7.8 PROGRAM MANAGEMENT (8000-8999)

MSFC shall establish and maintain documented procedures/instructions for the management, operation, and performance of Research and Development Projects, including basic and applied research and engineering development projects. MSFC shall also establish and maintain documented procedures and instructions for the management and operation of NASA construction of facilities, architectural, and engineering design functions.

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 27 of 34

The following activities are governed by the Program Management series: (See paragraph 4.a.)

- a. General (80XX)
- b. Advanced Studies (81XX)
- c. Supporting Research and Technology (82XX)
- d. Grants and Research Contracts (83XX)
- e. Tracking and Data Acquisition (84XX)
- f. Support Services (85XX)
- g. Operations (86XX)
- h. Safety and Mission Assurance (87XX)
- i. Real Property and Facilities (88XX)
- j. Program Medical Support (89XX)

7.8.1 DESIGN CONTROL (ISO ELEMENT 4.4)

7.8.1.1 GENERAL

MSFC departments and offices shall establish and maintain documented procedures to control and verify the design of all products (hardware and software) and facilities, as well as control research, technology and development activities (RT&D), within the scope of MSFC's MMS in order to ensure that the specified requirements are met.

Procedures pertaining to design of flight hardware, flight software, and flight-associated ground support equipment are defined in MPG 8060.1, "Flight Systems Design Control," and MPG 8040.1, "Configuration Management, MSFC Programs/Projects." Design of facilities is addressed in MPG 8823.1, "Design Control for Facilities." Procedures for design of non-flight and non-facility products are defined in MPG 8060.2, "Non-Flight and Non-Facility Design Control."

7.8.1.2 DESIGN AND DEVELOPMENT PLANNING

Design and development activities are assigned to qualified personnel equipped with adequate resources. MSFC prepares plans commensurate with contract or task agreements for each design and development activity. The plans describe or reference these activities and define responsibility for their implementation. Each flight project will have a baseline set of requirements and a configuration management plan before commencing design. The plans for flight projects will be in accordance with MPG 8060.1, "Flight Systems Design Control," and the guidelines established by OMB Circular A-119, "Federal Participation in the Development and Use of Voluntary Standards," for selection of design specifications and standards. Non-flight hardware and facility

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 28 of 34

design planning will be in accordance with MPG 8060.2 and MPG 8823.1, respectively. The plans will be updated as the design evolves.

7.8.1.3 ORGANIZATIONAL AND TECHNICAL INTERFACES

Organizational and technical interfaces between groups which input into the design process are defined and the necessary information documented, transmitted, and regularly reviewed.

7.8.1.4 DESIGN INPUT

Design input, including applicable statutory and regulatory requirements, is identified, documented, and reviewed by each appropriate department or office for adequacy and accuracy. Ambiguous, incomplete, or conflicting requirements are resolved with those responsible for imposing the requirements. The results of the contract or task agreements review shall be considered during design input. Any changes agreed to will be documented and approved.

7.8.1.5 DESIGN OUTPUT

Design output is documented and expressed in terms that can be verified against the design-input requirements and validated. The design output shall meet the design input requirements, contain or reference acceptance criteria, and identify critical design characteristics crucial for the safe and proper functioning of the product. This includes, as appropriate, operating, storage, handling, maintenance, and disposal requirements. All design output documentation is reviewed prior to release.

7.8.1.6 DESIGN REVIEW

Design reviews and criteria are planned, conducted, and documented during the design activity. Design review participation shall include representatives of all appropriate functions concerned with the design stage being reviewed. Records of such reviews are maintained.

7.8.1.7 DESIGN VERIFICATION

Design verifications are conducted during the design activity to ensure that the design output meets the design-input requirements. The design-verification criteria and results are recorded (see paragraph 7.1.7).

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 29 of 34

7.8.1.8 DESIGN VALIDATION

Design validation activities are performed to ensure that the product meets the previously agreed-to contract or task agreement defined needs/requirements.

7.8.1.9 DESIGN CHANGES

All changes and/or modifications to designs and specifications shall be identified, documented, reviewed, and approved prior to implementation. Changes and modifications to flight designs and specifications shall be in accordance with MPG 8040.1. Non-flight hardware and facility design changes will be in accordance with MPG 8060.2 and MPG 8823.1, respectively.

7.8.2 PRODUCT IDENTIFICATION AND TRACEABILITY (ISO ELEMENT 4.8)

Where appropriate, MSFC shall establish and maintain documented procedures for identifying the product from receipt through all stages of production, delivery, and installation. (Refer to MPG 8040.2, "Product Identification.") MSFC shall establish and maintain documented procedures for unique identification of individual products or batches requiring traceability. (Refer to MPG 8040.3, "Product Traceability.") Records of such identification are maintained. (See paragraph 7.1.7).

7.8.3 INSPECTION AND TESTING (ISO ELEMENT 4.10)

7.8.3.1 GENERAL

MSFC shall establish and maintain documented procedures for inspection and testing activities to verify that the specified requirements for products are met. (Refer to MPG 8730.1, "Inspection and Testing.") The required inspection and testing, and the records to be established, shall be detailed in the quality plan or documented procedures.

7.8.3.2 RECEIVING INSPECTION AND TESTING

a. MSFC shall ensure that incoming products are not used or processed (except in the circumstances described in paragraph c. below) until they have been inspected or otherwise verified as conforming to specified requirements. Verification of the specified requirements shall be in accordance with the quality plan and/or documented procedures.

b. Consideration shall be given to the amount of control exercised at the contractor's premises and the recorded evidence

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 30 of 34

of conformance provided, in determining the amount and nature of receiving inspection.

c. An incoming product released for urgent production purposes prior to verification shall be positively identified and recorded (see paragraph 7.1.7) to permit immediate recall and replacement in the event of nonconformity to specified requirements.

7.8.3.3 IN-PROCESS INSPECTION AND TESTING

MSFC shall:

a. Inspect and test products as required by the quality plan and/or documented procedures; and

b. Hold products until the required inspection and tests have been completed or necessary reports have been received and verified, except when products are released under positive-recall procedures (see paragraph 7.8.3.2). Release under positive-recall procedures shall not preclude the activities outlined in paragraph a. above.

7.8.3.4 FINAL INSPECTION AND TESTING

MSFC shall carry out all final inspection and testing in accordance with the quality plan and/or documented procedures to complete the evidence of conformance of the finished product to the specified requirements.

The quality plan/or documented procedures for final inspection and testing shall require that all specified inspection and tests, including those specified either on receipt of products or in-process, have been carried out and that the results meet specified requirements.

No product shall be dispatched until all the activities specified in the quality plan and/or documented procedures have been satisfactorily completed and the associated data and documentation are available and authorized.

7.8.3.5 INSPECTION AND TEST RECORDS

MSFC shall establish and maintain records which provide evidence that the products have been inspected and/or tested. These records shall show clearly whether the products have passed or failed the inspections and/or tests according to defined acceptance criteria. Where the product fails to pass any inspection and/or test, the procedures for control of

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 31 of 34

nonconforming product shall apply (see paragraph 7.8.6). Records shall identify the inspection authority responsible for the release of product (see paragraph 7.1.7).

7.8.4 CONTROL OF INSPECTION, MEASURING, AND TEST EQUIPMENT (ISO ELEMENT 4.11)

7.8.4.1 GENERAL

MSFC shall establish and maintain documented procedures (refer to MPG 8730.5) to control, calibrate, and maintain inspection, measuring, and test equipment (including test software) used by MSFC to demonstrate the conformance of product to the specified requirements. Inspection, measuring, and test equipment shall be used in a manner which ensures that the measurement uncertainty is known and is consistent with the required measurement capability.

Where test software or comparative references such as test hardware are used as suitable forms of inspection, they shall be checked to prove they are capable of verifying the acceptability of product, prior to release for use during production, installation, and servicing and shall be rechecked at prescribed intervals. MSFC shall establish the extent and frequency of such checks and shall maintain records as evidence of control (see paragraph 7.1.7).

Where the availability of technical data pertaining to the measurement equipment is a specified requirement, such data shall be made available, when required by the customer or customer's representative, for verification that the measuring equipment is functionally adequate.

7.8.4.2 CONTROL PROCEDURE

MSFC shall:

- a. Determine the measurements to be made and the accuracy required, and select the appropriate inspection, measuring, and test equipment that is capable of the necessary accuracy and precision;
- b. Identify all inspection, measuring, and test equipment that can affect product quality, and calibrate and adjust them at prescribed intervals, or prior to use, against certified equipment having a known valid relationship to internationally or nationally recognized standards. Where no such standards exist, the basis used for calibration shall be documented;

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 32 of 34

c. Define the process employed for the calibration of inspection, measuring, and test equipment, including details of equipment type, unique identification, location, frequency of checks, check method, acceptance criteria, and the action to be taken when results are unsatisfactory;

d. Identify inspection, measuring, and test equipment with a suitable indicator or approved identification record to show the calibration status;

e. Maintain calibration records for inspection, measuring, and test equipment (see paragraph 7.1.7);

f. Assess and document the validity of previous inspection and test results when inspection, measuring, and test equipment is found to be out of calibration;

g. Ensure that the environmental conditions are suitable for the calibrations, inspections, measurements, and tests being carried out;

h. Ensure that the handling, preservation, and storage of inspection, measuring, and test equipment is such that the accuracy and fitness for use are maintained; and

i. Safeguard inspection, measuring, and test facilities, including both test hardware and test software, from adjustments which would invalidate the calibration setting.

7.8.5 INSPECTION AND TEST STATUS (ISO ELEMENT 4.12)

The inspection and test status of the products shall be identified by suitable means, which indicate the conformance or nonconformance of products with regard to inspection and tests performed. The identification of inspection and test status shall be maintained, as defined in the quality plan and/or documented procedures, throughout production, installation, and servicing of the product to ensure that only products that have passed the required inspections and tests or released under an authorized concession (see paragraph 7.8.6.2) are dispatched, used, or installed. Activities relating to inspection and test status are performed in accordance with MPG 8730.2, "Inspection and Test Status."

7.8.6 CONTROL OF NONCONFORMING PRODUCT (ISO ELEMENT 4.13)

7.8.6.1 GENERAL

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 33 of 34

S&MA shall establish and maintain documented procedures to ensure that product that does not conform to specified requirements is prevented from unintended use or installation. (Refer to MPG 8730.3, "Control of Nonconforming Product.") Controls shall provide for identification, documentation, evaluation, segregation, and disposition of nonconforming product and for notification to the directorate concerned.

7.8.6.2 REVIEW AND DISPOSITION OF NONCONFORMING PRODUCT

Responsibility for review and authority for the disposition of nonconforming product shall be defined. Nonconforming product shall be reviewed in accordance with documented procedures for rework to meet requirements, accept with or without repair, re-graded for alternative applications, or reject/scrap. The proposed use or repair of product that does not conform to specified requirements shall be reported to the customer or customer's representative for approval. A description of the nonconformity that has been accepted and all repairs shall be recorded. Any repaired or reworked product shall be re-inspected by the S&MA office in accordance with the quality plan and/or documented procedures. Quality records for the identification, documentation, evaluation, segregation, and disposition of nonconforming product/services will be maintained.

7.8.7 STATISTICAL TECHNIQUES (ISO ELEMENT 4.20)

7.8.7.1 IDENTIFICATION OF NEED

MSFC shall identify where statistical techniques are required for establishing, controlling, and verifying process capabilities and product characteristics.

7.8.7.2 PROCEDURES

MSFC shall establish and maintain documented procedures to implement and control the application of the statistical techniques as needed. (Refer to MPG 8730.4, "Statistical Techniques.")

7.9 FINANCIAL MANAGEMENT (9000-9799)

MSFC shall establish and maintain documented procedures/instructions for the management and operation of NASA Accountable Officer's accounts.

Marshall Policy Directive DA01		
Marshall Management Manual	MPD 1280.1	Revision: C
	Date: December 6, 1999	Page 34 of 34

The following activities are governed by the Financial Management series: (See paragraph 4.a.)

- a. Principles and General Policies (90XX)
- b. Agencywide Coding Structure (91XX)
- c. Accounting (92XX)
- d. Financial Reports (93XX)
- e. Fiscal Operations (96XX)
- f. NASA Travel Regulations (97XX)

8. RESPONSIBILITIES

- a. The MSFC Center Director is responsible for implementation and control of the MMS, including providing sufficient resources for MMS activities.
- b. All MSFC directors, program/project managers, and technical personnel are responsible for understanding and complying with the MMS and MSFC's policy for quality.
- c. The Management Representative is responsible for maintenance of this MMM.

9. RECORDS

None

10. MEASUREMENT

- a. Internationally recognized third-party certification to the ISO 9001 standard in accordance with NPD 8730.3, "NASA Quality Management System Policy (ISO 9000)."
- b. Ongoing maintenance as measured by subsequent successful re-certifications.
- c. MSFC internal quality audits of the MMS in accordance with paragraph 7.1.8.

11. CANCELLATION

MPD 1280.1B dated September 16, 1999

Original Signed by
Carolyn S. Griner for

A. G. Stephenson
Director